

RESEARCH & DEVELOPMENT LABORATORY

June 1966

I. GENERAL

1. The Research & Development Laboratory played host to three  
25X1C8a [REDACTED]  
panied by Mr. [REDACTED] and other Agency staff members,  
25X1A9a received a complete tour of the facilities on Tuesday, 21  
June.
2. Other visitors to the Laboratory during this reporting period  
25X9A8 included [REDACTED] Deputy Director of the National  
Security Agency, who, accompanied by Mr. [REDACTED] received a 25X1A9a  
tour of the facilities on 15 June.
3. Three members of the Laboratory's design staff attended  
25X1A9a training courses in June. Mr. [REDACTED] attended a 25X1A9a  
course in Infrared Technology and Mr. [REDACTED] course 25X1A9a  
in Semiconductor Circuits, both conducted at the University  
of Michigan, and Mr. [REDACTED] attended the Agency's  
Management Course. 25X1A9a
4. During the fiscal year ending with this report, the fabrica-  
tion facility of the Laboratory produced equipment valued at  
\$688,370.00 for delivery to stock.

II. DESIGN

25X9A2



25X1C1a1



One prototype is being constructed and has a targeted delivery date of 12 July 1966.

2.

25X1C1e



3. One design project was completed this month with the delivery of six prototype agent antennas to OC-OS for evaluation. These antennas are adjustable length dipoles designed to operate over the 3 - 8 mc range and to be used with the RT-48 and Delco 5300 transmitters. Production of this antenna will be done externally by the [REDACTED]

25X1A5a1

### III. ANALYSIS & APPRAISAL

1. Five evaluations were published and distributed during June. Five other evaluations were completed and the reports written. These are in process of being published. Seven evaluations are presently in the testing phase.

25X1A5a1

2. The [REDACTED] communications receiver is a general purpose vacuum tube receiver covering the frequency range of 1 to 30 mc. It is capable of AM, CW, and MCW reception. Bandwidths of 0.1, 0.3, 1.2, 6.5, and 13.5 kc are available on a front panel switch. The unit is manufactured by [REDACTED]

25X1A5a1 [REDACTED]

25X1A5a1

S E C R E T

Performance is of the same high quality demonstrated by the RA-17 and the RA-217 units previously tested. Results of tests met or exceeded nearly all specifications. No serious deficiency was noted in its performance. One unit was received out of alignment, but this was quickly corrected by the manufacturer.

3. The Signal Data AN/GSH-6 (XE-2) recorder/reproducer set was manufactured by [REDACTED], for 25X1A5a1 U. S. military use. It is intended to provide a small portable system for the record-playback of medium-speed Morse code transmissions. It met the requirements for most of the technical specifications, and is useable at an error rate from 1.1% to 2.8%. The following improvements would be desirable for more satisfactory operation:

There should be some delay between the time the IDY signal is ended and the turn-on of the recorder to allow for fades or the operator turning off the IDY.

Variation in amplitude of the pulses was noted, including a roll off in the leading edge of a pulse which sometimes transformed a dash into a dot. The general indication is that the motor speed is varying or that the tape pressure on the head is varying.

Mechanically, the small toggle switches protrude from the case and snag on the operator's pocket and can be damaged.

#### IV. FABRICATION

1. A new production project initiated this month calls for the construction of a personnel alerting system. This system, consisting of a GE Portamobil, a CU-20 tone generator, and two Motorola Page Boy receivers, is to provide tone alert and voice reception. This is a priority project with a target completion date of 15 July 1966.
2. Two production projects had quantity increases this month. The HG-48A handcrank generator, designed to charge the BS-48 power supply, was raised from 500 units to 750 units and the CL-48 tree clamp f/u/w the HG-48A was also raised from 500 units to 750 units.

- 25X1A5a1
3. Another new project is a production rerun of the ruggedized AN-58A agent antenna. The AN-58B's are modified for use with the [REDACTED] Fifty-nine units will be modified.
  4. The BC-48A solar charger production project was completed this month with final delivery to the warehouse for stock. The BC-48A is designed to charge the BS-48 power supply from sunlight. Three hundred and twenty-two units were produced.
  5. The HG-48A handcrank generator project had a partial delivery of 63 units to the warehouse for stock.
  - 6.

25X1C1e



7. Equipment produced by the Laboratory and delivered to stock this month was \$53,830.00.

V. ADMINISTRATIVE

TDY

25X1A9a

25X1A6a

[REDACTED] 22 June to date

TRANSFERS

N. A.

PCS

25X1A9a

25X1A6a

[REDACTED] 24 June

EOD

N. A.

RESIGNATIONS

N. A.

~~SECRET~~

EFFECTIVE PROMOTIONS

25X1A9a [REDACTED] GSS-09 to GS-10 5 June

TRAINING

25X1A9a [REDACTED] University of Michigan 6 - 10 June  
University of Michigan 6 - 10 June  
Management Course 6 - 10 June

OTHER

Co-op students returned to school:

25X1A9a [REDACTED] VPI 10 June  
VPI 10 June  
Georgia Tech 17 June  
Georgia Tech 23 June  
Georgia Tech 24 June  
Georgia Tech 24 June

Co-op students returned to work:

25X1A9a [REDACTED] VPI 13 June  
Georgia Tech 20 June  
Georgia Tech 20 June  
Georgia Tech 20 June  
VPI 20 June  
VPI 20 June

25X1C1a1

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- d. Objections to the high noise level of the soroban punch will be eliminated by use of a Monroe data/log MC-4000. The MC-4000 is a direct optical printout device which can be maintained on a standby basis without increasing noise level. Also, this unit can print out directly at 1480 words-per-minute.
- e. Each of the AR/A-18's seven major system modules will have its own definitive specification. In this manner individual modules can be continually improved as new and better ways of handling various system functions are developed.

Two AR/A-18 stations will be built. A contract for this work is presently in negotiation with ██████████, 25X1A5a1 Torrance, California. Present scheduling is for an 18-month program.

2. OS-12 HF FREQUENCY SYNTHESIZER:

The engineering model of the OS-12 frequency synthesizer was delivered after numerous and varied delays. The OS-12 went through the acceptance tests at ██████████ quite well. The 25X1A5a1 spurious levels seemed a little high (-40 db), but this does not look like a problem that won't be eliminated if the program goes into a prototype phase. The OS-12 delivers a good signal from 2 - 30 MHz in 1 kHz steps. The synthesizer is capable of driving the RT-49, RT-66, and RT-73 transmitters.

The state-of-art is now such that the complete design of a prototype can be implemented with analog and digital integrated circuits at low cost and with low input power requirements. Only the digital circuits are integrated in the engineering model. There would be some electrical design changes to reduce tolerances and reduce spurious levels. By reducing the tolerances and by using all integrated circuits, production costs could be much less than the "as is" estimate of \$1200.00.

3. RF WATTMETER AND DUMMY LOADS:

25X1A5a ██████████ has delivered the engineering model of the RF wattmeter and dummy loads. We are now in the process of making final arrangements on what changes or additions are to be incorporated in the service test model. To be delivered with the service test model are a complete instruction manual and a set of reproducible production drawings. We have also contracted

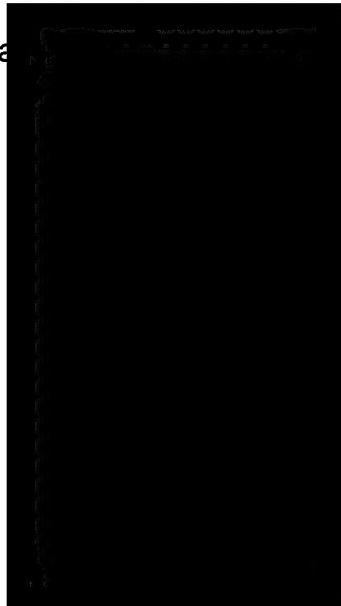
for 300 calibration points. Calibrating the unit is expensive since there are an infinite number of impedances that can be set up. Therefore, the recommended manner of calibration is to calibrate the RF wattmeter and dummy loads to specific test setups. OC-E/TAP and OC-E/R&D-EP are in the process of modifying the agent transmitter matching specifications. The wattmeter has been designed to be compatible with the new specifications.

The computer program was not able to give a "ball park" indication of impedance versus switch position above 20 MHz, which makes calibration that much more difficult. [REDACTED] 25X1A5a1 feels that the program can be improved. There will be several improvements over the engineering model: the external extended range switch will become internal; the knobs will be color coded; the power range will be increased from 100 to 150 watts; RG-213U coax will be used instead of RG-8U because of RG-213U's better aging properties; the vernier will have higher resolution. Unfortunately, the unit will still weigh 217 pounds. It is accurate, resettable, and a timesaver if you can find room for it (40 3/4" x 25 1/2" x 20 3/4").

## II. ADMINISTRATIVE

### TDY

25X1A9a



Los Angeles, California	1 - 9 June
San Francisco, California	
Fort Wayne, Indiana	21 June
Chicago, Illinois	22 June
Princeton, New Jersey	1 - 2 June
Buffalo, New York	10 June
Chatsworth, California	14 June
Palo Alto, California	15 June
Torrance, California	16 June
Colmar, Pennsylvania	6 - 7 June
Chicago, Illinois	20 June
Hawthorne, California	13 June
Chatsworth, California	14 June
Palo Alto, California	15 June
Torrance, California	16 June
Buffalo, New York	1 - 2 June
Mountain View, Calif.	6 June
Palo Alto, California	7 June
[REDACTED]	1 - 21 June

25X1A6a

SECRET

TRANSFERS

N. A.

PCS

N. A.

EOD

N. A.

RESIGNATIONS

N. A.

EFFECTIVE PROMOTIONS

N. A.

TRAINING

N. A.

OTHER

25X1A9a Mr. [REDACTED] was on military leave from 13 - 24 June.

[REDACTED]